C.HAEN, B.COUTURIER on behalf of the LHCb Collaboration

LHCbDIRAC as Apache Mesos microservices

**GOAL**

The boss: “I want X instances of my services running, now!”
Me: “Okay!”. *click*. “Done!”
The boss: “Excellent!”

- **High availability**
- **Automatic placement**
- **Full control of the environment**
- **Heterogeneity of the machines acceptable**
- **One click new release rollout**
- **One click (or automatic) scaling**
- **Not limited to LHCbDIRAC**
- **No change needed in LHCbDIRAC code**

- **Requires education and expertise**
- **Large infrastructure**
- **Everything can collapse**
- **Usual Docker® drawbacks:**
  - **Local data complicated**
  - **Monitoring**
  - **Traceability**

**Current status**

- **Manual test setup with 3 masters, 5 slaves**
- **Independent LHCbDIRAC setup with about 20 components**
- **Happy with the reliability and ease of use**
- **Next steps:**
  - **Puppet profile of the hosts**
  - **Simplify administration**
  - **Integrate with the usual testing platform**
  - **Go in production**

**Part of LHCbDIRAC Data Management System**

- **LHCbDIRAC**: composition of agents and services (relying on database)
- **Service**: stateless frontend, multiple instances of each for redundancy purposes
- **Agent**: periodically executed tasks, cannot always be duplicated
- **LHCb installation**: 134 service and 146 agent instances

- **Apache Mesos® for LHCbDIRAC:**
  - Improves reliability and fault tolerance of the overall system
  - Eases their placement currently manual
  - Allows for dynamic scaling

**LHCbDIRAC as Apache Mesos microservices**

- **Mesos Framework**
  - Marathon
  - Distributed systemd/cron
- **Slaves**
  - Docker container
- **Masters**
  - MESOS
  - Masters
- **Query**
- **Monitor**

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